

THE SONATE PROJECT, A NEW NEUTRON SCATTERING PLATFORM FOR MATERIALS SCIENCE RESEARCH.

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The European neutron scattering community is the largest in the world, gathering more than 6000 scientists performing experiments around neutron research reactors and spallation sources. The European landscape of neutron facilities is evolving quickly with the closure of a number of aging research reactors: for example the reactor Orphée in France, BER in Berlin and Kjeller in Norway closed in 2019; the closure of the High Flux Reactor in Grenoble is also planned to take place early in the next decade. While the European Spallation Source (ESS) should start later in this decade, its capacity will not be sufficient to replace the closed facilities. Hence, the Laboratoire Léon Brillouin (LLB), operated by the CEA and the CNRS in France, is developing a project plan to build a facility using a High Current Compact Accelerator driven neutron source (HiCANS). The aim is to provide the needed access to neutrons to the French research community in the next decade. In collaboration with accelerator and neutron experts from the CEA, a reference design for a source dubbed SONATE ('Source cOmpacte de Neutrons s'Appuyant sur la Technologie des accélérateurs') emerged and first proofs of concept have been established on the IPHI – Neutron platform [1]. We will present the latest progress in the development of the different technologies (accelerator & target) necessary to build a CANS with performances on par with medium power nuclear reactors in the field of neutron scattering.

[1] The *IPHI – Neutron* project is supported by the region Ile-de- France. For more information, see the [SONATE and IPHI – Neutron Project](#) website.